UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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ART UNIT	PAPER NUMBER
2665	

DATE MAILED: 02/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

	Application No.	Applicant(s)
Office Action Summary	09/924,599	DESAI ET AL.
	Examiner	Art Unit	
	Daniel J. Ryman	2665	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>19 December 2005</u>.

2a)☒ This action is **FINAL.**   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-6 and 8-15</u> is/are pending in the application.

     4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-6 and 8-15</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

     a)☐ All   b)☐ Some * c)☐ None of:

       1.☐ Certified copies of the priority documents have been received.

       2.☐ Certified copies of the priority documents have been received in Application No. _____.

       3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

     * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
     Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
     Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1.   Applicant's arguments filed 12/19/2005 have been fully considered but they are not

persuasive. On page 17 of the Response, regarding claims 1-6 and 8-11, Applicant asserts that

"none of the references cited recognize the advantages of processing data packets separately

according to different address groups." Specifically, Applicant asserts that "there does not appear

to be anything [in the cited prior art] that makes obvious the allocation of data packets in a first

address group on shared channels, and assigns data packets in a second address group to a single

channel." Examiner, respectfully, disagrees.

2.   Majeti discloses that the router uses a routing table to map destination addresses onto

output channels (col. 4, lines 23-29 and col. 4, line 64-col. 5, line 9) wherein packets are mapped

onto a single output channel based upon their original address (col. 2, line 64-col. 3, line 11).

Delvaux also teaches varying the number of parallel connections as a function of the expected

load in order to provide better granularity (col. 1, lines 26-34). Therefore, Majeti in view of

Delvaux suggests allocating data packets in a first address group on shared channels, and

assigning data packets in a second address group to a single channel in order to provide better

granularity by permitting connections requiring only a single channel to use a single channel and

connections requiring multiple channels to use multiple channels. As such, Examiner maintains

that the cited prior art renders the limitations of claims 1-6 and 8-11 obvious.

3.   On page 17 of the Response, regarding claims 12-15, Applicant first asserts that the

Tomlins patent fails to disclose the essential features argued regarding claims 1-6 and 8-11.

However, in light of Examiner's foregoing arguments, Examiner asserts that there is no need for

Tomlins to disclose the "essential features" since they are already disclosed by Majeti and Delvaux.

4.   Applicant then asserts that "[c]laims 12-15 are directed to a method that involves seven distinct steps. It is unclear which of these steps are found in which of the three cited references." Again, Examiner, respectfully, disagrees. The rejection of claim 12 incorporates the rejection of claims 1 and 6. Therefore, if a limitation is not explicitly rejected in the rejection of claim 12, then one should look to the rejection of claims 1 and 6 to determine how this limitation is rendered obvious by the cited prior art. For instance, the limitation "receiving the packet at a tunnel source wherein the tunnel source is coupled to a cable modem termination system (CMTS) via an interface having a first IP address (T1)" from claim 12 is not explicitly rejected in the rejection of claim 12. However, it is disclosed in the rejection of claims 1 and 6 that Majeti teaches "a tunnel source having an input coupled to said router" and Delvaux teaches that a "tunnel source assigns each packet it receives to one of a plurality of addresses". In addition, Examiner explicitly equates the CMTS of claim 12 with Majeti's Multiplexing Platform in the rejection of claim 12. Thus, Examiner asserts that Majeti in view of Delvaux discloses "receiving the packet at a tunnel source wherein the tunnel source is coupled to a cable modem termination system (CMTS) via an interface having a first IP address (T1)." Therefore, Examiner maintains that it is not "unclear which of these steps are found in which of the three cited references."

5.   In addition, on page 18 of the Response, Applicant asserts that it is unclear which reference teaches "dividing the incoming packets into a plurality of sub-packets, and addressing the sub-packets individually, where a single incoming packet may be divided and the parts addresses differently and assigned to different tunnel destinations." However, Examiner

explicitly indicated in the rejection of claim 12 that Tomlins teaches dividing the plurality of

packets into sub-packets which are transmitted across a parallel transmission system. In addition,

a tunneling mechanism is taught by Delvaux, as seen in the rejection of claims 1 and 6. As such,

Examiner maintains that the cited prior art discloses each limitation of claim 12.

6.   Finally, Applicant asserts on page 18 that there is "lacking in the rejection [] a logical

case for combining the three references, and especially for combining the three references in a

logical order that yields the series of seven steps claimed." Again, Examiner, respectfully,

disagrees. The rejection in claims 1 and 6, which is incorporated into the rejection of claim 12,

details how and why to combine Majeti and Delvaux. For instance, combining Delvaux with

Majeti provides a system with better granularity by permitting connections requiring only a

single channel to use a single channel and connections requiring multiple channels to use

multiple channels. The rejection of claim 12 details how and why to combine Majeti and

Delvaux with Tomlins. For instance, combining Tomlins with Majeti and Delvaux provides a

system that minimizes or obviates the use of null or padding data. As such, Examiner maintains

that a logical case for combining the references has been made.

7.   In view of the foregoing, Examiner maintains that the cited prior art renders the claimed

limitations obvious.

Information Disclosure Statement

8.   The listing of references in the specification is not a proper information disclosure

statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information

submitted for consideration by the Office, and MPEP § 609 A(1) states, "the list may not be

incorporated into the specification but must be submitted in a separate paper." Therefore, unless

the references have been cited by the examiner on form PTO-892, they have not been

considered. The reference on page 8, lines 15-18 should be included in an IDS.

Claim Objections

9.   Claim 12 is objected to because of the following informalities: in line 2, "at a first source

address S" should be "at a first source having address S" since, as currently worded, the claim

requires that the packets are originated at a source address. Appropriate correction is required.

Claim Rejections - 35 USC § 103

10.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in
> section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are
> such that the subject matter as a whole would have been obvious at the time the invention was made to a person
> having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the
> manner in which the invention was made.

11.   Claims 1-6, 8-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Majeti et

al. (USPN 5,675,732), of record, in view of Delvaux (USPN 6,775,305), of record.

12.   Regarding claims 1 and 6, Majeti discloses a system and method for transmitting signal

packets (IP packets), each of the packets having a destination address, from a source (ref. 300) to

two or more destinations (ref. 230) (col. 1, lines 53-col. 2, line 18), the system comprising: a

router (ref. 210: multiplexing platform unit) having a routing table, said router coupled to receive

packets, and to map each packet destination address to a channel modulator using the routing

table (col. 2, line 64-col. 3, line 11; col. 4, lines 23-29; and col. 4, line 64-col. 5, line 9), wherein

packets are mapped onto a single output channel based upon their original address (col. 2, line

64-col. 3, line 11).

Majeti does not expressly disclose a router having at least two address groups, said router

to map each packet destination address to one of the address groups; and a tunnel source having

an input coupled to said router and having an output and wherein for the packets having an

original destination address which belongs to the first address group of said router, the tunnel

source assigns each packet it receives to one of a plurality of addresses, each address being

associated with a tunnel destination wherein each one of the tunnel destination addresses is

mapped to an output channel and wherein for packets having an original destination address

belonging to the second address group of said router are mapped onto a single output channel

based upon their original address. However, Majeti does disclose that the router uses a routing

table to map destination addresses onto output channels (col. 4, lines 23-29 and col. 4, line 64-

col. 5, line 9) wherein packets are mapped onto a single output channel based upon their original

address (col. 2, line 64-col. 3, line 11).

Delvaux teaches, in a packet switching network used in the "last-mile" (col. 8, lines 5-

18), using a tunnel source (col. 16, lines 52-60: tunneled packet encapsulated to form a TPDU)

having an input coupled to a switch and having an output and wherein the tunnel source assigns

each packet it receives to one of a plurality of addresses (inverse multiplexing), each address

being associated with a tunnel destination wherein each one of the tunnel destination addresses is

mapped to an output channel (col. 6, lines 15-47). Delvaux's system increases an individual

user's data rate while maintaining data sequence order (col. 1, lines 14-34). Therefore, it would

have been obvious to one of ordinary skill in the art at the time of the invention to have a tunnel

source having an input coupled to said router and having an output and wherein the tunnel source

assigns each packet it receives to one of a plurality of addresses, each address being associated

with a tunnel destination wherein each one of the tunnel destination addresses is mapped to an

output channel.

Delvaux also teaches varying the number of parallel connections as a function of the

expected load in order to provide better granularity (col. 1, lines 26-34). Therefore, it would have

been obvious to one of ordinary skill in the art at the time of the invention to have the router have

at least two address groups, said router to map each packet destination address to one of the

address groups, wherein for the packets having an original destination address which belongs to

the first address group of said router, the tunnel source assigns each packet it receives to one of a

plurality of addresses and wherein for packets having an original destination address belonging

to the second address group of said router are mapped onto a single output channel based upon

their original address in order to vary the number of parallel connections as a function of the

expected load in order to provide better granularity by permitting connections requiring only a

single channel to use a single channel and connections requiring multiple channels to use

multiple channels.

13.   Regarding claims 2 and 8, Majeti in view of Delvaux discloses that a new address of a

packet is based upon the state of the output channels (Majeti: col. 4, lines 44-51) where an

occupied channel will not be assigned a new connection.

14.   Regarding claims 3 and 9, Majeti in view of Delvaux discloses that a new address of a

packet is based upon Quality of Service requirements (Majeti: col. 5, lines 48-52).

15.   Regarding claims 4 and 10, Majeti in view of Delvaux discloses that a new address of a

packet is based upon traffic demands (Majeti: col. 4, lines 44-51 and Delvaux: 26-34).

16.   Regarding claims 5 and 11, Majeti in view of Delvaux discloses that said tunnel source

corresponds to an IP tunnel source; and said tunnel destination corresponds to an IP tunnel

destination (Majeti: col. 2, line 64-col. 3, line 11 and Delvaux: col. 16, lines 52-60) where

Majeti's connections are IP connections.

17.   Claims 12-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Majeti et al.

(USPN 5,675,732), of record, in view of Delvaux (USPN 6,775,305), of record, in further view

of Tomlins (USPN 6,618,383), of record.

18.   Regarding claim 12, incorporating the rejection of claims 1, 6, and 7, Majeti in view of

Delvaux discloses each limitation of claim 12, as outlined in the rejection of claims 1, 6, and 7,

where the CMTS is broadly defined to be equivalent to Majeti's Multiplexing Platform (ref.

210), except that a packet in the first address space is divided into a plurality of sub-packets.

Tomlins teaches, in a parallel transmission system, dividing a packet into a plurality of sub-

packets in order to minimize or obviate the use of null or padding data (col. 2, lines 38-54).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the

invention to divide a packet into a plurality of sub-packets before sending the packet using

parallel transmission in order to minimize or obviate the use of null or padding data.

19.   Regarding claim 13, Majeti in view of Delvaux in further view of Tomlins discloses

receiving the encapsulated sub-packets at the tunnel destination; combining the channels to

provide the original packets; and forwarding the packets in their original order to the destination

(Delvaux: col. 17, lines 25-60 and Tomlins: col. 3, line 62-col. 4, line 7).

20.   Regarding claim 14, Majeti in view of Delvaux in further view of Tomlins discloses that

combining the channels comprises removing the encapsulation headers from each of the

encapsulated sub-packets to again provide the original packets (Tomlins: col. 3, line 62-col. 4,

line 7) where SAR implies that the sub-packets of the segmented packet will be reassembled into

the original packet by stripping the headers of the sub-packets.

21.   Regarding claim 15, Majeti in view of Delvaux in further view of Tomlins discloses that

encapsulating comprises: generating a new packet having a payload field (Tomlins: col. 2, lines

38-54); placing the original packet in the payload field of the new packet (Tomlins: col. 2, lines

38-54); and adding a new packet header to the new packet with the new packet header having a

source address corresponding to the address T1 and a destination address corresponding to one of

a plurality of separate IP interfaces on the tunnel destination and wherein the destination address

is part of an L address space and wherein each address pair formed by the source address of the

new packet header and the destination address of the tunnel defines a separate tunnel (Majeti:

col. 4, lines 23-29 and col. 4, line 64-col. 5, line 9 and Tomlins: col. 2, lines 38-54).

Conclusion

22.   The prior art made of record and not relied upon is considered pertinent to applicant's

disclosure. Sheeran (USPN 6,909,726) see entire document which pertain to a cable TV system

that employs variable bandwidth. DeGrandpre et al. (USPN 6,678,275) see entire document

which pertains to a multilink system that distinguishes between data sent in a single channel and

data send over a multilink channel.

23.   **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time

policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within TWO

MONTHS of the mailing date of this final action and the advisory action is not mailed until after

the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the mailing

date of this final action.

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Daniel J. Ryman whose telephone number is (571)272-3152. The

examiner can normally be reached on Mon.-Fri. 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Huy Vu can be reached on (571)272-3155. The fax phone number for the

organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

applications is available through Private PAIR only. For more information about the PAIR

system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

<div style="text-align: right;">

Daniel J. Ryman
Examiner
Art Unit 2665

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SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600